

Progress Toward Standards

Grade 3

Mathematics

Framework

1/13/03

Strand 1: Numbers and Operations

Standard 1.1: Students demonstrate understanding of number concepts.

In the grade 3 test, understanding is demonstrated with the following indicators as well as by solving problems, reasoning, communicating, representing, and making connections based on the indicators—

- reading and writing whole numbers to 9999
- recognizing place value in whole numbers to 9999
- identifying the ordinal position (first, second, third, etc.) of objects or events
- ordering whole numbers to 9999 with and without the use of inequality symbols and number lines
- recognizing and generating equivalent expressions of whole numbers (composing and decomposing whole numbers)
- relating fractions with denominators of 2, 3, 4, 5, or 10 to region and set models
- relating decimal notation to tenths to region models
- recognizing equivalent fractions and decimals when presented with models
- recognizing odd and even numbers and numbers found by skip counting by 2, 3, 4, 5, and 10

Standard 1.2: Students demonstrate an understanding of the concepts of operations.

In the grade 3 test, understanding is demonstrated with the following indicators as well as by solving problems, reasoning, communicating, representing, and making connections based on the indicators—

- relating multiplication and division to pictorial models of the operations
- relating addition, subtraction, multiplication, and division to real life situations appropriate to those operations
- recognizing the relationships among the four operations on whole numbers
- applying the commutative, associative, and identity properties

Standard 1.3: Students demonstrate fluency in computing and estimating.

In the grade 3 test, fluency is demonstrated with the following indicators as well as by solving problems, reasoning, communicating, representing, and making connections based on the indicators—

- adding and subtracting whole numbers and money
- multiplying and dividing whole numbers involving the basic facts only
- estimating based on the operations described above
- solving simple two-step story problems

Strand 2: Algebra

Standard 2.1: Students demonstrate understanding of patterns, relations, and functions.

In the grade 3 test, facility is demonstrated with the following indicators as well as by solving problems, reasoning, communicating, representing, and making connections based on the indicators—

- determining the next term(s) or missing term(s) in a numeric or geometric pattern
- representing rules for numeric patterns using words or symbols, e.g., “add 2” or “+4, -1”
- creating patterns given a simple rule

Standard 2.2: Students demonstrate the ability to use algebraic symbols to represent and analyze situations.

In the grade 3 test, understanding is demonstrated with the following indicators as well as by solving problems, reasoning, communicating, representing, and making connections based on the indicators—

- representing appropriate real life situations with addition or subtraction open sentences
- identifying the missing number, represented by a box or other symbol, in an addition or subtraction open sentence

Standard 2.3: Students demonstrate the ability to create models to represent mathematical relationships.

In the grade 3 test, ability is demonstrated with the following indicators as well as by solving problems, reasoning, communicating, representing, and making connections based on the indicators—

- matching a simple chart with a described real life situation or a pattern

Standard 2.4: Students demonstrate an understanding of change in a variety of situations.

In the grade 3 test, understanding is demonstrated with the following indicators as well as by solving problems, reasoning, communicating, representing, and making connections based on the indicators—

- matching a situation involving a constant rate of change to a bar graph that best represents that situation

Strand 3: Geometry

Standard 3.1: Students demonstrate understanding of two- and three-dimensional geometric shapes and the relationships among them.

In the grade 3 test, understanding is demonstrated with the following indicators as well as by solving problems, reasoning, communicating, representing, and making connections based on the indicators—

- using properties to describe, identify, and sort 2- and 3-dimensional figures [Vocabulary: square, rectangle, circle, triangle, parallelogram, trapezoid, kite, rhombus, cube, sphere, cone, prism, pyramid, cylinders, side, angle, vertex, face, edge, right angle]
- recognizing two- and three-dimensional figures irrespective of their orientation
- recognizing the results of subdividing and combining shapes; e.g., tangrams
- recognizing figures that have the same size and shape (congruent figures)

Standard 3.2: Students demonstrate understanding of coordinate systems.

In the grade 3 test, understanding is demonstrated with the following indicators as well as by solving problems, reasoning, communicating, representing, and making connections based on the indicators—

- describing motion involving distance and direction (left, right, up, down) on a grid

Standard 3.3: Students demonstrate understanding of symmetry and transformations.

In the grade 3 test, understanding is demonstrated with the following indicators as well as by solving problems, reasoning, communicating, representing, and making connections based on the indicators—

- identifying a symmetric figure and its line of symmetry

Standard 3.4: Students demonstrate an ability to perform visual and spatial reasoning.

In the grade 3 test, ability is demonstrated with the following indicators as well as by solving problems, reasoning, communicating, representing, and making connections based on the indicators—

- visualizing the effect of procedures such as cutting a figure from a folded piece of paper

Strand 4: Measurement

Units that may be used in the Grade 3 test:

Linear measurement: inches, feet, yards, centimeters, and meters

Capacity: cup, pint, quart, gallon, liter

Weight/mass: ounce, pound, gram, kilogram

Temperature: degrees Fahrenheit, degrees Celsius

Time: minute, hour, day, week, month

Standard 4.1: Students demonstrate understanding of concepts and processes of measurement.

In the grade 3 test, understanding is demonstrated with the following indicators as well as by solving problems, reasoning, communicating, representing, and making connections based on the indicators—

- ordering objects relative to size of measurable attribute
- selecting the best tool to use to measure length, capacity, weight/mass, or temperature of given object
- selecting the best unit to use for a length, capacity, or weight/mass measurement
- performing simple conversions that can be easily performed using addition between the following: inches and feet, cups and pints, pints and quarts, ounces and pounds, minutes and hours, days and weeks
- making reasonable estimates of length, capacity, weight, or temperature for a given object or situation

Standard 4.2: Students demonstrate facility with the tools, procedures, and formulas of measurement.

In the grade 3 test, understanding is demonstrated with the following indicators as well as by solving problems, reasoning, communicating, representing, and making connections based on the indicators—

- using rulers to measure lengths to the nearest inch or centimeter
- telling time from analog and digital clocks to the nearest minute
- using a calendar to determine days of the week, dates, and lapsed time
- reading a pictured thermometer or scale with accuracy to the labeled numbers
- determining the value of a set of pictured coins worth less than one dollar
- finding the distance around (perimeter) or area of a region made of congruent squares

Strand 5: Data Analysis and Probability

Standard 5.1: Students demonstrate facility in collecting, organizing, and displaying data.

In the grade 3 test, facility is demonstrated with the following indicators as well as by solving problems, reasoning, communicating, representing, and making connections based on the indicators—

- selecting questions to be asked and groups to be surveyed for a given purpose
- reading data from a chart or bar graph
- recording data on a bar graph

Standard 5.2: Students demonstrate an understanding of statistical methods.

In the grade 3 test, understanding is demonstrated with the following indicators as well as by solving problems, reasoning, communicating, representing, and making connections based on the indicators—

- recognizing the most common data point in a set of data (mode).

Standard 5.3: Students demonstrate the ability to draw conclusions and make inferences based on data.

In the grade 3 test, ability is demonstrated with the following indicators as well as by solving problems, reasoning, communicating, representing, and making connections based on the indicators—

- drawing simple conclusions based on data given in charts or bar graphs

Standard 5.4: Students demonstrate an understanding of probability.

In the grade 3 test, understanding is demonstrated with the following indicators as well as by solving problems, reasoning, communicating, representing, and making connections based on the indicators—

- judging events as impossible, very likely, unlikely, or certain